

# UNITED NUCLEAR CORPORATION

## NEW MEXICO

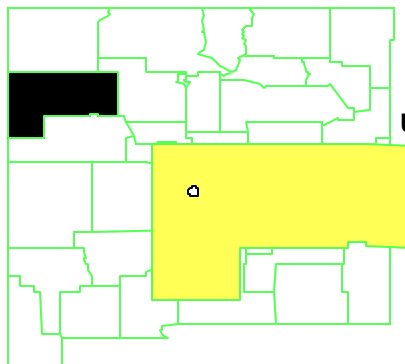
EPA ID# NMD030443303

## EPA REGION 6 CONGRESSIONAL DISTRICT 03

McKinley County  
Church Rock,

Updated 11/30/99

Other Names:  
UNC Mining and Milling  
Church Rock Mill



## Site Description

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**Location:** 17 miles northeast of Gallup, New Mexico.

! Located on southern border of Navajo reservation.

**Population:** ! The surrounding area is sparsely populated, with the nearest residence located 1 1/2 miles from the site. A Navajo Indian Reservation lies 1/2 mile to the north of the site.

**Setting:** ! Four water wells are within a 4-mile radius, the nearest being 2 miles northeast of the site; however, nearby residents generally have used bottled water for drinking, since the well water had a bad taste.

! Tailings impoundment - 100 acres, 15-20 feet thick.

! Abandoned mill facility - 25 acres.

! Tailings unstabilized.

! Nearest residence is 1.5 miles to the north.

! Nearest drinking water well is 1.7 miles.

**Hydrology:** ! Site underlain by Upper Gallup and alluvial aquifer.

! Alluvial contamination to north and south; bedrock contamination to north and east.

! Tailings pile adjacent to pipeline arroyo.

## Wastes and Volumes

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! The principal pollutants include acidic mill tailings.

- Total dissolved solids: > 60,000 parts per million (ppm) in tailings liquid

- Sulfate: > 40,000 ppm tailings liquid

- Thorium: 40,000 picocuries/liter (pci) in tailings liquid

- Radium: 24 pci/l tailings liquid

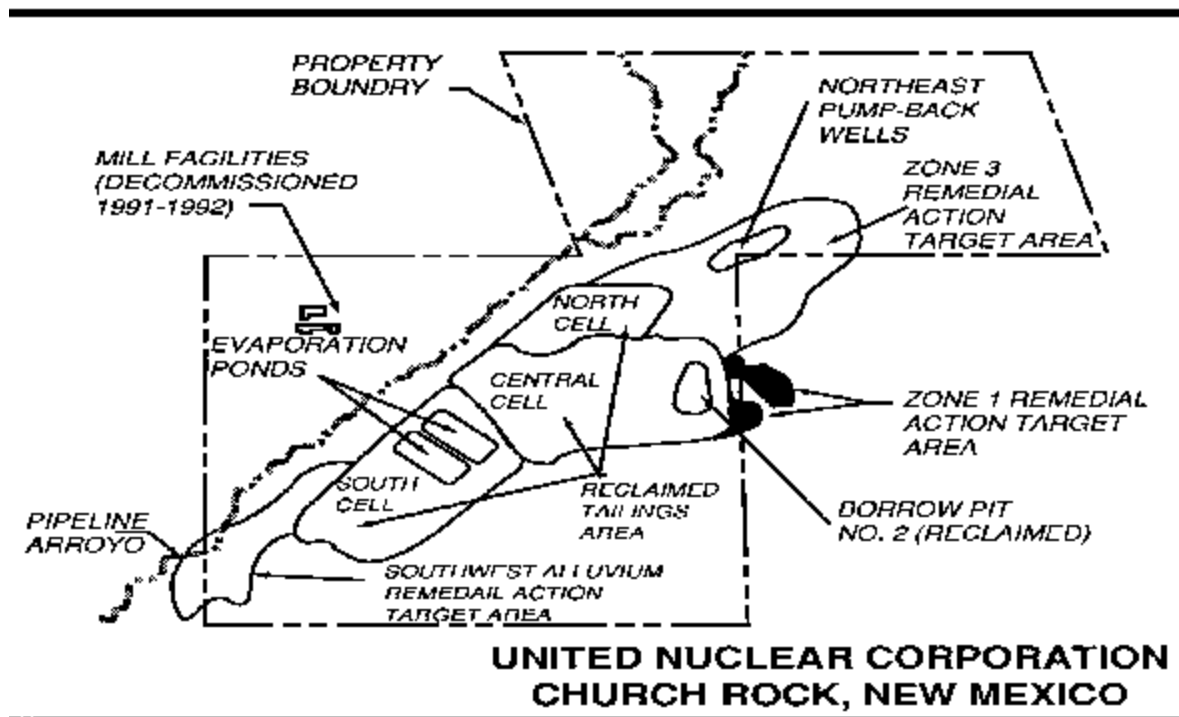
- Aluminum: > 2000 ppm in tailings liquid

- Ammonia: > 5000 ppm tailings liquid

- Iron: > 4000 ppm (tailings liquid)

! 4.7 million cubic yards tailings

## Site Map and Diagram



## Site Assessment and Ranking

### NPL LISTING HISTORY

Site HRS Score: 30.36  
Proposed Date: 12/30/82  
Final Date: 9/08/83

## The Remediation Process

### Site History:

- ! Mining began in area in 1968; Mill opened in July 1977.
- ! Tailings pond broke in 1979 releasing 93 million gallons of slurry to Rio Puerco.
- ! Mill closed in June 1982.
- ! New Mexico turns over uranium mill licensing authority to the Nuclear Regulatory Commission (NRC) in June 1986.
- ! EPA finalized its Remedial Investigation and Feasibility Study in August 1988 addressing ground water contamination at the site.
- ! Remedial Action is being conducted by UNC pursuant to EPA's Unilateral Administrative Order

(UAO) and NRC's Source Material License. Reviews of the Remedial Action will be made on annual basis, and modifications made to the ground water pump and treat program as necessary, to achieve cleanup standards to the extent practicable.

! On September 12, 1989, EPA sent UNC a letter approving the Remedial Design according to the UAO. UNC submitted Remedial Action modifications on June 18, 1990; approved by EPA in August 1990.

! UNC proposed on April 24, 1991 additional wells in the Upper alluvium north of the site (to set lysimeters in auger holes of varying depth). Preliminary results show higher nitrate concentration in the deeper lysimeters.

! UNC has requested a change for the nitrate cleanup criteria. EPA and NRC are evaluating the ground water remedy in the Five Year Review of the site. The Five Year review was completed by EPA on September 25, 1998.

#### **Health Considerations:**

! Several people use shallow alluvial aquifers in the area. The nearest domestic/livestock well is 1.7 miles downgradient of the site in the Upper Gallup aquifer.

! Contaminants of Concern: heavy metals, low level radionuclides, nitrates, sulfates and dissolved solids.

#### **Other Environmental Risks:**

! A break in the tailings dam in 1979 sent 93 million gallons of tailings fluid into the Rio Puerco. The upper Gallup aquifer is contaminated in the vicinity of the pond. However the dam break was not the reason for the listing of the site on the NPL.

## **Record of Decision**

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Signed:  
September 30, 1988

! The remedy includes: Ground water pump and treat in the Upper Gallup Zone 3 aquifer and Southwest Alluvial aquifer; limited action in Zone 1 of the Upper Gallup Aquifer.

#### Other Remedies Considered

1. No Action
2. Limited Action
3. Pump and treat in Zone 3, Southwest Alluvium, and two hot spots
4. Pump and treat in Zone 1, Zone 3, Southwest Alluvium, and two hot spots

! The 1994 Ground Water Corrective Action Report by UNC has been reviewed. With EPA concurrence, NRC has not approved termination of pumping at Southwest Alluvium and Zone 1 as was requested by UNC. The 1996 Corrective Action Report indicates more than 50 % of zone 3 is dry. Only 7 out of 24 extraction wells in Zone 3 have pumping rates exceeding 1.0 gallon per minute (gpm). Only 2 wells in the seepage plume area extract at rates greater than 1.0 gpm. Three Zone 1 extraction

wells have a combined rate of less than 0.5 gpm due to low hydraulic conductivity. Continued extraction will bring diminishing returns in Zone 1 as the wells can only operate for one hour per day.

! The current conditions (lack of decline in nitrate in the Southwest Alluvium, drying up of zone 3 limiting extraction in the plume affected area, and extremely low extraction rate in Zone 1) noted above require evaluation of the pump and treat system. However future activity will be evaluated after the Five Year Review.

## Community Involvement

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- ! Community Involvement Plan: Developed 06/84, revised 05/89
- ! Open houses and workshops: 08/88 and 2/27/92
- ! Original Proposed Plan Fact Sheet and Public Meeting: 08/88
- ! Original ROD Fact Sheet: 10/88
- ! Milestone Fact Sheets: 05/90, 06/91, 2/92
- ! Citizens on site mailing list: 227
- ! Constituency Interest: No population center near the site. Major concern has been potential water well contamination for nearby Navajo reservation, but no actual contamination has been noted. Interest in the Rio Puerco continues with water hookups as the primary request.
- ! Site Repository: Gallup Public Library, 115 West Hill Avenue, Gallup, NM 87301

## Technical Assistance Grant

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- ! Availability Notice: 01/89
- ! Letters of Intent Received: None
- ! Grant Award: N/A

## Contacts

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- ! **Remedial Project Manager (EPA):** Greg Lyssy, 214/665-8317, Mail Sta. 6SF-LT
- ! **State Contact:** Beiling Liu, 505/827-0184
- ! **Navajo Superfund Contact:** Levon Benally, 520/871-7327
- ! **Community Involvement Coord. (EPA):** Nancy Stonebarger, 214/665-6619, Mail Sta. 6SF-PO
- ! **Attorney (EPA):** Jim Turner, 214/665-3159, Mail Sta. 6SF-DL
- ! **State Coordinator (EPA):** Mail Sta. 6SF-LT
- ! **PRP(s) :** United Nuclear Corporation
- ! **EPA Oversight Contractor:** None

## Present Status and Issues

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- ! The initial actions performed at the United Nuclear Corporation site have stabilized the mine tailings and have protected the Rio Puerco from further contamination spills.
- ! Ground water treatment has been under way since 1989.
- ! The cleanup of the ground water by extraction and evaporation of contaminated water has been in progress for over seven years.
- ! The five year review of the remedial process was completed by EPA on September 25, 1998.

! UNC completed mill decommissioning, decontamination, and placement of the interim cover on the tailings site by November 1993.

! At the request of UNC, NRC has modified it's license to allow the mill site and the buildings area for unrestricted use. The restricted area is now limited to the tailings site. The modification was approved by NRC in April 1995.

## **Benefits**

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! NRC license conditions have stipulated a cover for the tailings impoundment to be completed by 12/31/97 to conform to Federal Register announcement of 10/25/91.

! Portions of the site surface are now used for animal grazing by local residents, an environmental and economic benefit to the Navajo Nation.